



Report No.: GZE160558-A

NVLAP LAB CODE 201011-0

LM-79-08 Test Report

For

HOCAN GROUP CO LTD

(Brand Name: N/A)

Rm 1902, Easet cinn Bldg 253-261 Hennessy Rd Wanchai,HongKong

Outdoor Non-Cutoff and Semi-Cutoff Wall-mounted Area Luminaires

Model name(s): HC-WPB-40

Representative (Tested) Model: HC-WPB-40 (3000K)
HC-WPB-40 (5700K)

Model Different: All construction and rating are the same, except CCT

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: Jun.16,2016

Review By:

Tommy Liang

Manager: Tommy Liang

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Laboratory: Standard-Tech Co. Ltd Testing Center
NVLAP CODE: 201011-0

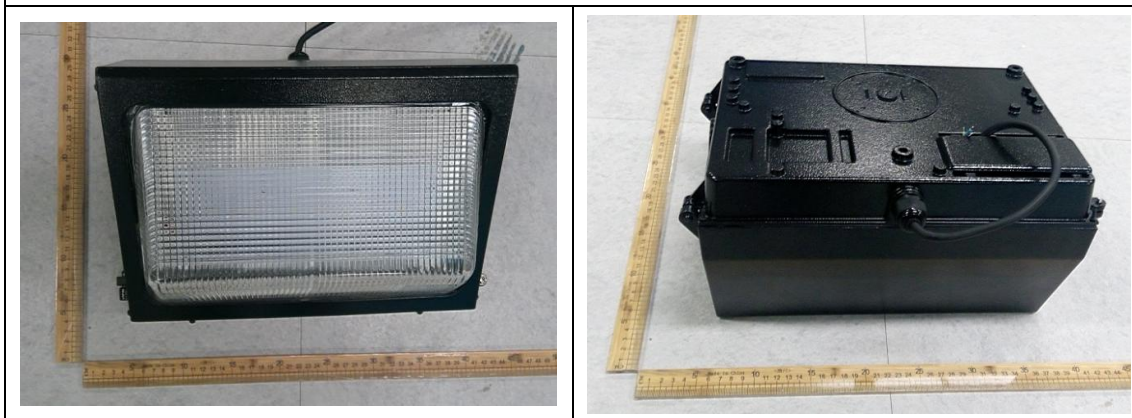
Report Format Number STD/QR4909-A/2

Address: Standard-Tech Building, No.6 Guanhong Road,Guangzhou Science City, Guangzhou 510663, China

Tel: 8620-3229 0320 Fax: 8620-32290422 <http://www.standard-tech.com>

1.1 Product Information:

Organization Name	HOCAN GROUP CO LTD	
Brand Name	N/A	
Model Number	HC-WPB-40	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Outdoor Non-Cutoff and Semi-Cutoff Wall-mounted Area Luminaires	
Rated Voltage / Frequency	120 -277Vac, 50/60 Hz	
Nominal Power	40W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,5700K	
LED Manufacturer	Nichia Corporation	
LED Model	NF2L757DR	
Sample Number	GZE160558-A1(3000K), A2(5700K)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Photo


1.2 Test Specifications:

Date of Receipt	Jun.15,2016
Date of Test	Jun.16,2016
Test item	<ol style="list-style-type: none"> 1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none"> 1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

1.3 Test Methods

<p>1) Photometric and Light Distribution Measurement – Goniophotometer Method:</p> <p>Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25° C ± 1° C, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals.</p>
<p>2) Chromaticity Measurement – Sphere-Spectroradiometer Method:</p> <p>Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25° C ± 1° C. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.</p>
<p>3) Electrical Measurements:</p> <p>Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at 25° C ± 1° C. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.</p>

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2016-06-16	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	HC-WPB-40(3000K)		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160558-	120.0	60	0.3385	40.20	0.9898	11.47
A1	277.0	60	0.1587	39.65	0.9017	16.35
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	71	R9	0
Frequency (Hz)	60	R2	81	R10	54
CCT (K)	3156	R3	88	R11	63
Duv	-0.0013	R4	70	R12	43
Chromaticity (x, y)	x=0.4245 y=0.3964	R5	68	R13	72
Chromaticity (u', v')	u'=0.2459 v'=0.5164	R6	72	R14	93
Color Rendering Index (CRI)	72.8	R7	81	R15	65
R9	0	R8	52	--	--

Photometric Measurement – Goniophotometer Method :

Parameter	Result		DLC V4.0 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	5423	5472	--	
Luminous Efficacy (lm/W)	134.90	138.01	--	
Total Luminous (lm) (0°-90° zone)	4326	4366	300-5000(± 10%)	
Luminous Efficacy (lm/W) (0°-90° zone)	107.61	110.11	Standard: >= 90(-3%)	Premium: >= 110(-3%)
Zonal lumens in the 80-90° zone (%) (0°-90° zone)	12.0	--	<=10(+3)	
Beam Angle (°)	105.1	--	--	
Center Beam Candle Power (cd)	1091	--	--	

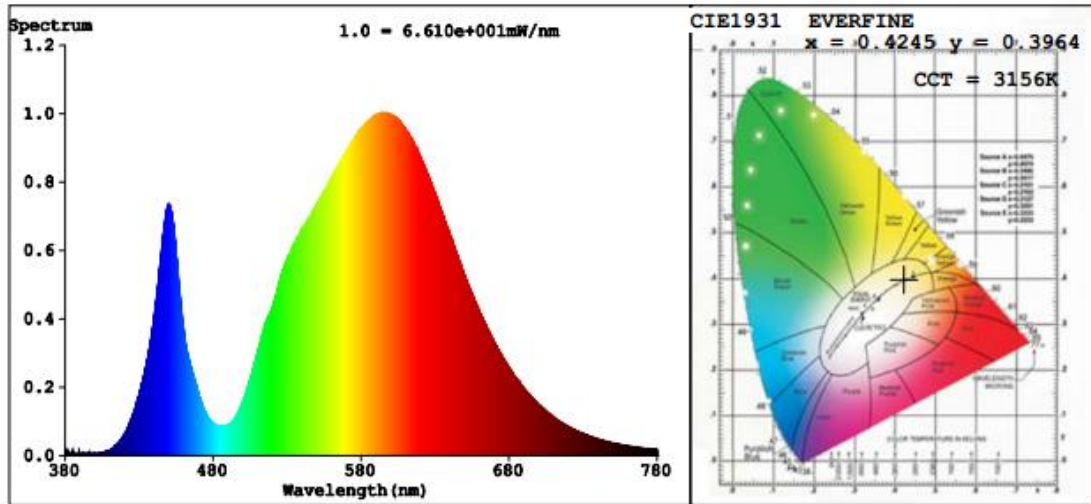
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Spectral Power Distribution & Chromaticity Diagram

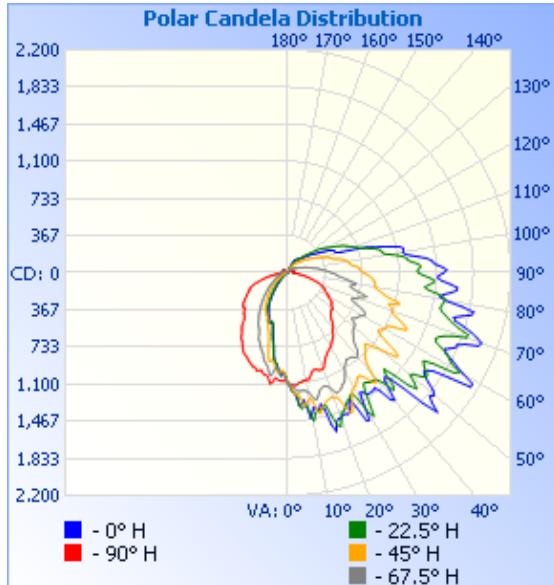


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	834.3	15.4%
0-40	1,349.9	24.9%
0-60	2,538.4	46.8%
60-90	1,787.4	33%
70-100	1,557.4	28.7%
90-120	894.8	16.5%
0-90	4,325.8	79.7%
90-180	1,098.4	20.3%
0-180	5,424.3	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	105.1	1.9%	90-100	420.1	7.7%
10-20	291.4	5.4%	100-110	293.9	5.4%
20-30	437.9	8.1%	110-120	180.8	3.3%
30-40	515.6	9.5%	120-130	106.7	2%
40-50	562.4	10.4%	130-140	56.5	1%
50-60	626.1	11.5%	140-150	29.3	0.5%
60-70	650.2	12.0%	150-160	10.1	0.2%
70-80	620.0	11.4%	160-170	0.8	0%
80-90	517.2	9.5%	170-180	0.2	0%

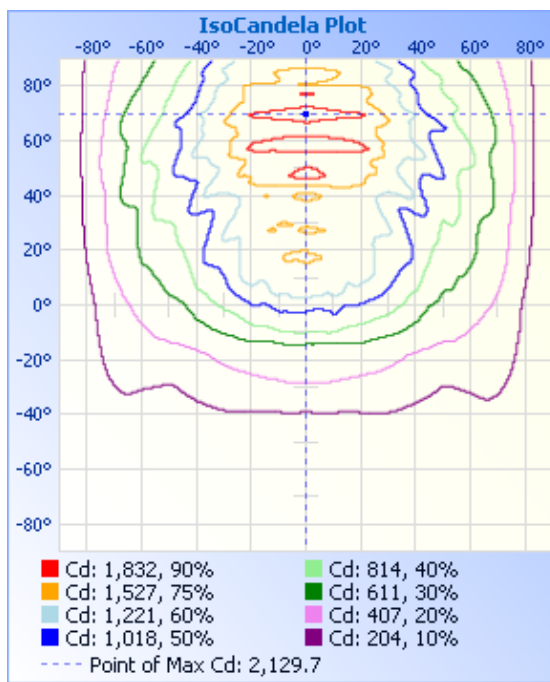
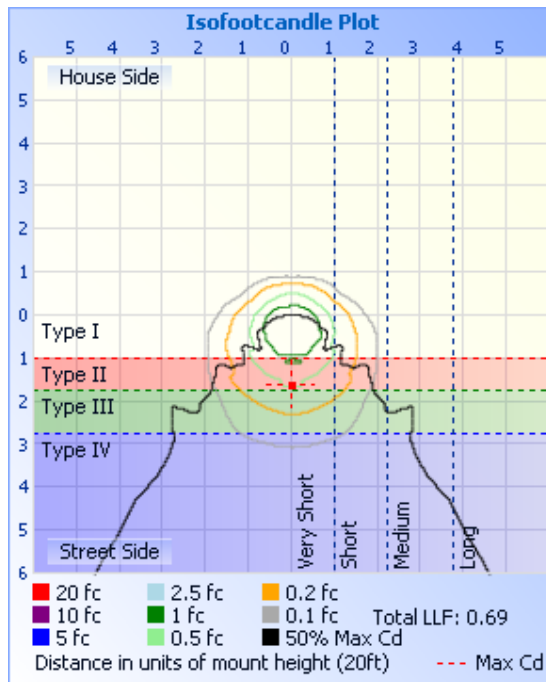
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	3.77 fc	45.8 ft	33.3 ft
34.0ft	0.94 fc	91.6 ft	66.5 ft
51.0ft	0.42 fc	137.5 ft	99.8 ft
68.0ft	0.24 fc	183.3 ft	133.0 ft
85.0ft	0.15 fc	229.1 ft	166.3 ft
102.0ft	0.10 fc	274.9 ft	199.6 ft

■ Vert. Spread: 106.8°
■ Horiz. Spread: 88.7°



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C (DEG) y (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338
0	1091	1091	1091	1091	1091	1091	1091	1091	1091	1091	1091	1091	1091	1091	1091	1091
5	1065	1128	1147	1283	1323	1321	1199	1171	1104	1015	1029	1004	980	983	985	976
10	1080	1250	1221	1451	1398	1487	1256	1203	1069	975	895	859	801	829	878	1027
15	999	1219	1344	1297	1392	1355	1351	1207	991	880	738	599	559	582	736	899
20	987	1238	1306	1464	1529	1544	1306	1205	1010	788	541	512	526	507	572	783
25	939	1234	1457	1481	1428	1392	1515	1254	900	667	466	460	452	474	477	674
30	886	1162	1288	1537	1500	1598	1304	1127	843	569	433	390	375	393	436	584
35	800	1087	1241	1328	1436	1321	1240	1039	778	480	367	294	273	301	376	494
40	709	1065	1322	1365	1642	1386	1280	1070	697	403	295	210	178	213	305	410
45	605	940	1085	1457	1609	1342	1095	916	597	321	235	145	113	144	247	330
50	549	846	1131	1642	1885	1575	1161	847	569	257	174	89.7	70.3	88.4	180	262
55	539	792	1231	1710	1685	1653	1191	778	526	201	123	63.3	40.2	60.5	125	209
60	473	861	1065	2003	2004	1962	1111	851	460	155	85.1	39.4	26.6	37.9	85.1	161
65	422	757	1341	1595	1768	1615	1294	764	399	124	60.2	24.5	16.9	24.0	59.8	130
70	374	766	1066	1856	2035	1875	1097	728	350	101	40.2	8.08	3.29	7.40	40.5	105
75	264	733	1135	1552	1699	1608	1130	707	248	84.8	24.4	1.94	2.16	1.82	24.8	88.6
80	170	708	930	1588	1586	1582	885	676	153	72.1	17.9	2.27	2.81	2.22	19.0	75.9
85	98.8	556	882	1392	1682	1392	850	536	89.3	67.2	15.1	2.98	3.47	2.73	15.7	71.0
90	66.2	442	746	1252	1539	1290	748	430	60.8	63.5	12.7	3.00	3.78	2.99	12.7	66.8
95	58.3	365	671	1224	1423	1230	686	343	53.3	55.2	10.3	3.09	3.84	3.04	10.3	58.2
100	58.0	276	634	998	1154	1035	610	263	53.0	46.1	7.87	2.81	3.90	3.11	8.07	51.1
105	57.5	214	524	896	1003	909	522	201	54.2	39.9	5.65	2.71	3.98	3.10	5.82	45.2
110	55.2	159	465	719	646	729	441	150	54.0	33.6	4.43	2.61	3.91	2.90	4.27	39.0
115	51.3	120	377	624	508	628	362	113	51.2	26.1	2.89	2.52	3.70	2.76	3.04	27.6
120	47.0	94.7	303	515	425	511	288	89.8	47.4	18.7	2.44	2.46	3.38	2.60	2.39	18.6
125	36.7	77.3	241	394	329	423	234	73.7	39.8	12.1	1.78	2.17	2.80	2.14	1.85	12.3
130	24.2	61.5	192	303	268	319	183	59.6	28.0	7.91	1.54	2.07	2.48	2.16	1.79	7.61
135	15.2	44.7	158	239	216	243	155	43.3	17.7	5.61	1.51	1.96	2.43	2.18	1.72	5.09
140	9.58	28.6	134	193	180	182	130	26.8	10.8	3.76	1.54	1.97	2.37	2.20	1.77	3.16
145	6.06	14.3	108	168	160	152	101	12.3	6.68	2.68	1.70	2.00	2.31	2.18	1.83	1.87
150	4.14	6.53	69.2	136	147	115	62.8	7.07	4.26	2.36	1.60	2.00	2.25	2.03	1.85	1.75
155	2.42	3.58	27.4	81.4	106	67.7	23.3	3.83	2.41	1.66	1.58	1.75	2.16	1.93	1.90	1.68
160	1.59	1.47	2.08	25.2	38.6	21.7	1.56	1.75	1.46	1.38	1.48	1.75	2.02	1.97	1.98	1.68
165	1.69	1.02	0.90	1.19	3.38	1.11	1.12	1.14	1.47	1.47	1.48	1.62	1.89	2.01	2.06	1.81
170	1.78	1.34	1.22	1.16	1.06	1.15	1.23	1.42	1.91	1.88	2.23	2.41	2.48	2.15	2.19	2.25
175	1.85	1.72	1.67	1.55	1.30	1.43	1.62	1.68	2.03	1.85	2.31	2.52	2.41	2.14	2.26	2.20
180	1.85	1.92	2.05	1.62	1.56	1.69	1.81	1.75	1.91	1.85	1.93	2.00	1.76	1.56	1.68	1.94

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2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2016-06-16	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	HC-WPB-40(5700K)		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160558-	120.0	60	0.3519	41.77	0.9891	12.17
A2	277.0	60	0.1627	41.20	0.9142	18.23
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method :

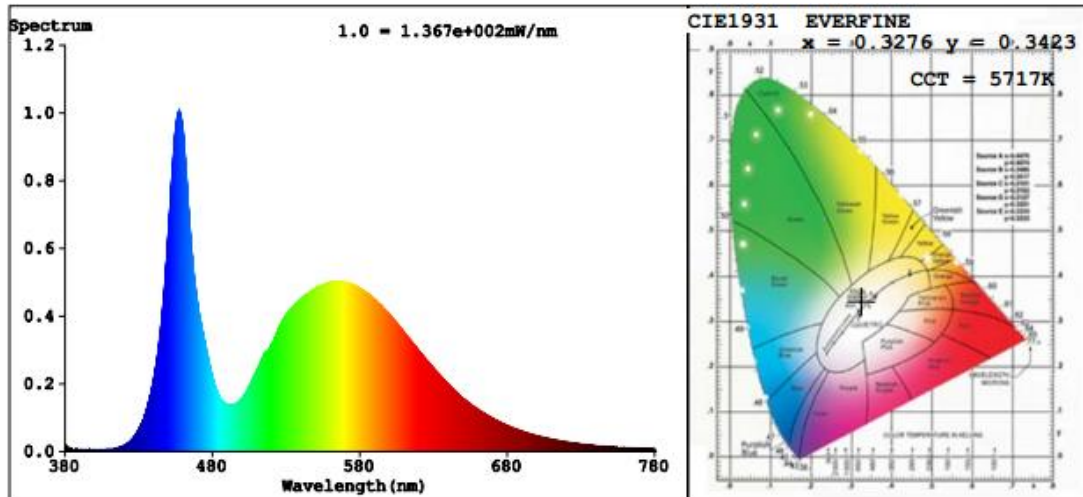
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	70	R9	0
Frequency (Hz)	60	R2	83	R10	56
CCT (K)	5717	R3	88	R11	60
Duv	0.0028	R4	67	R12	40
Chromaticity (x, y)	x=0.3276 y=0.3423	R5	70	R13	74
Chromaticity (u', v')	u'=0.2031 v'=0.4774	R6	73	R14	93
Color Rendering Index (CRI)	73.7	R7	83	R15	66
R9	0	R8	56	--	--

Photometric Measurement – Sphere-Spectroradiometer Method :

Parameter	Result		DLC V4.0 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	6662	6721	--	
Luminous Efficacy (lm/W)	159.49	163.13	--	
Total Luminous (lm) (0°-90° zone)	5310*	5357*	300-5000(± 10%)	
Luminous Efficacy (lm/W) (0°-90° zone)	127.12	130.02	Standard: >= 90(-3%)	Premium: >= 110(-3%)

* These values are calculated assuming ZLD of 0°-90° zone is 79.7% (see “Zonal Lumen Tabulation” on page 5).

Spectral Power Distribution & Chromaticity Diagram



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3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2015-07-01	2016-06-30
ST-R-331	Spectral analysis system HAAS-2000	2015-07-01	2016-06-30
D204	Standard Lamp	2015-07-01	2016-06-30
PF2010	Power Meter for Integrating Sphere	2015-07-01	2016-06-30
EE-09	Goniophotometer system	2015-07-01	2016-06-30
D908S	Standard Lamp	2015-07-01	2016-06-30
PF210	Power Meter for Goniophotometer	2015-07-01	2016-06-30
ST-R-181A	Temperature Tester	2015-07-01	2016-06-30
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

******* END OF REPORT *******

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